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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/619,351

07/14/2003

Hwa Jeong Lee

CU-3291 RJS

6345

26530

7590

02/08/2006

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EXAMINER

SHENG, TOM V

ART UNIT

PAPER NUMBER

2677

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/619,351

Applicant(s)

LEE ET AL.

Examiner

Tom V. Sheng

Art Unit

2677

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 4-20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 22-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of claims 1-3 and 21-25 in the reply filed on 11/17/2005 is acknowledged. Applicant considers claim 1 to be generic to both species 1 and 2. The Examiner disagrees because claim 1 is directed to the use of a PWM signal, which is a feature of species 1 but not species 2. Species 2 does not use PWM signal but a digital signal that is subsequently converted to an analog common voltage signal.

### ***Claim Objections***

2. Claims 2-3 and 22-23 are objected to because of the following informalities: claims 2 and 3 define third, fourth and fifth resistors without defining first and second resistors first. Similarly, claims 22 and 23 define eighteenth, nineteenth, twentieth resistors and sixth capacitor without defining any preceding resistors or capacitors first. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didier et al. (US 6,236,384 B1) in view of Furukawa et al. (US 6,388,967 B2) and Willis (US 2002/0097206 A1).

As for claim 1, Didier teaches a voltage regulating circuit of a liquid crystal display device, comprising:

a pulse signal generating means (microcontroller 12; fig. 1) for outputting a pulse width modulation signal (PWM output 20) in response to up/down signal for adjusting a voltage (viewing angle of LCD can be adjusted manually or automatically via an analog bias voltage; column 2 lines 38-56);

a smoothing means (filter 22) for smoothing the pulse width modulation signal from the pulse signal generating means to a direct current level (the filter's RC arrangement shows a low-pass filter and would produce a substantially DC signal; column 2 line 56 through column 3 line 5); and

an amplifying means (buffer amplifier 24) for outputting a voltage signal (a buffered bias voltage to the liquid crystal display via a viewing angle control circuit 14).

However, Didier does not teach the amplifying means (buffer amplifier 24) for amplifying the signal smoothed by the smoothing means to a predetermined level and outputting a voltage signal. Furukawa teaches with respect to LCD display that as the amplitude range of a PWM signal (from a PWM signal generator) is small, it is possible to adjust the total gain of the signal by disposing an amplifier at the front or rear stage of a filter 103 (fig. 1; column 6 lines 41-47). It would have been obvious to one of ordinary skill in the art to at least incorporate an amplification factor in Didier's buffer amplifier 24,

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since this would allow the generation of a smaller PWM signal. Moreover, the idea of amplifying a voltage to a desirable value or range is common.

Still, Didier and Furukawa do not teach that the bias voltage signal is a common voltage signal. Willis teaches in liquid crystal display of biasing the common voltage by with a substantially DC voltage (fig. 1 and 2; page 1 paragraph 14 through page 2 paragraph 18). It would have been obvious to one of ordinary skill in the art to at least drive the bias voltage to the common electrode of Didier, as changes in the common voltage would provide a bias in display and thus the viewing angle adjustment.

As for claim 2, the resistor R and capacitor C of the filter 22 of Didier correspond to claimed third resistor and first capacitor, respectively.

As for claim 3, the arrangement of a fourth and fifth resistor at an amplifier as claimed is well known in order to setup a gain factor.

### ***Allowable Subject Matter***

5. Claim 21 is allowed.
6. Claims 24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

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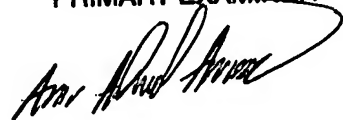
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Sheng  
February 1, 2006

AMR A. AWAD  
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read 'Amr A. Awad', is written over the printed name and title of the Primary Examiner.